lightning were noticed, including heat flash, multiple flash, destructive or rushing bolt, as well as the flash from earth upward, all alternating and lasting nearly two hours, when the cloud gradually disappeared. The phenomenon was a beautiful sight.

We must be careful in the matter of describing a flash as proceeding from the earth upward or from the clouds downward. A lightning flash does not last more than a few millionths of a second. In that short interval of time it makes a vivid impression on the retina, and the impression lasts at least one-tenth of a second. If, during that tenth, the eyeball moves even the least bit, it carries this impression with it; an observer may glance up and down several times during that tenth of a second and he will appear to see the lightning flash go up and down between the cloud and the earth. This is purely a subjective phenomenon; it is produced entirely within our own nervous system, and has nothing to do with the lightning, as it takes place after the lightning has entirely passed by.

One may often be alarmed at suddenly noticing that the anemometer has stopped revolving and then starts on again, or that it suddenly begins to turn in the opposite direction and tipped up instead of horizontally. In the presence of a large fly wheel one may glance along with the swiftly moving rim and see it apparently stand still. Such subjects, however, should not be mistaken for anomalies in nature.

RAINFALL AT COLON, COLOMBIA.

The following record kept by Mr. O. B. Schaffer, of the Panama Railway, has been kindly communicated by Mr. Robert T. Hill, of the United States Geological Survey. No details are given as to the size or location of the gauge, further than that it was at Colon:

Memorandum of rainfall at Colon, R. C.

	1893.	1894.	1895.		1893.	1894.	1895.
	Inches	*Inches.*	*Inches.*		*Inches.*	*Inches.*	*Inches.*
January	1.73	5.35	3.85	August	15.10	23.02	14.15
February	3.86	1.69	1.89	September	9.92	18.79	12.11
March	1.81	0.36	2.08	October	12.28	12.43	16.47
April	8.05	2.18	22.36	November	17.78	23.66	.....
May	6 65	9.84	16.17	December	30.94	25.12	.....
June	12.34	12.24	9.25				
July	11.44	19.08	17.10	Totals	131.90	153.76	.....

SENSIBLE TEMPERATURES OR THE CURVE OF COMFORT.

The Editor has been requested to state what methods should be used in order to calculate the sensible temperature when the ordinary wet and dry bulb thermometers have been read. This is a subject upon which, at present, there is no agreement among the authorities and, indeed, he knows of no satisfactory investigation upon the subject that he could recommend others to as a model, although for a hundred years past the subject has frequently been referred to, and it is quite generally conceded that the temperatures shown by a thermometer is a very imperfect index to that sensation of heat experienced by human beings.

Before attempting to express the sensible temperature in degrees, on the Fahrenheit scale, we are forced to realize that no two individuals are likely to agree very closely as to whether a given condition of the atmosphere should be called hot or cold, comfortable or uncomfortable. An extended effort was made in Washington in 1872–5 by Mr. J. W. Osborne to secure a corps of observers who should record several times daily their individual sensations. From these records he anticipated that it would be possible to establish a scale of terms closely corresponding to the scale of thermometric degrees, by means of which all observers would be able to record their sensible temperatures. But different individuals differed so entirely in their sensations on the same day that nothing satisfactory could be made out of a year's records by twenty or thirty observers. It is a matter of every day experience that even one and the same observer is affected differently by the weather under different circumstances, for instance, before and after eating or drinking; when clothed warmly or thinly; before and after a bath; and so on indefinitely. Recently, several complaints have been made in the daily papers to the effect that Weather Bureau predictions of warmer or colder weather were of no use to the workmen in the streets of New York because the Weather Bureau thermometers were high above the ground on tall buldings, and a change of 1° or 2° at those elevations might mean 5° or 10° in the street below. Now, the fact is that an observer, or especially a working man, may suffer from perspiration and, perhaps, sunstroke in the streets, whereas, if he were on top of a high building he would think it delightful tropical weather. The occupation in which a man is engaged is one of the most influential factors in determining his sensations as to temperature.

It must be evident that if we are to attach any definite conception to the idea of sensible temperature, we must ignore all the variations and irregularities introduced by clothing, by sickness, and by occupation or work, that is to say, the one who observes and the critic for whom we make predictions must be in normal health, perfectly quiet and passive, and clothed in the lightest possible manner. But even this is not sufficient. There is almost an infinite variety of normal physiological structures from the fair-skinned Caucasian to the black-haired Malay, and the black-skinned negro, each adapted to some special climate. Our standard of sensible temperatures must be modified to suit each of these different natures.

It is generally supposed that the blacks enjoy hot climates, but the white race cold climates; but so far as my observation goes it is easy to find here the weather so hot that the blacks do not enjoy it, or so cold that the whites do not enjoy it. It is probable that there is only a narrow range of temperature, moisture, and wind that is really perfectly enjoyable to each race. Without specifying any particular formula by which to combine atmospheric pressure, temperature, moisture, and wind into one figure that shall represent the so-called sensible temperature, I would prefer requesting those interested in this subject to simply make a note of the fact whenever they feel like saying "well this weather is just perfect." I have personally made a number of records of this kind in summer and winter. Having noted that my general sensation is that of a delightful atmospheric influence, I have then examined the temperature, pressure, and the wind at the spot where I happened to be in order to ascertain, if possible, which was the important meteorological element in bringing about this pleasant condition. All such results can be charted in a little diagram. On the left hand side is a vertical scale of relative humidities from zero up to a hundred, at the bottom is a horizontal scale of air temperatures from minus ten on the left up to a hundred on the right. At the proper point on this diagram I enter a 5 to indicate the fact that on one occasion I was very comfortable when a 5-mile wind was blowing and the temperature was 80° and the relative humidity 20°. At another time I enter a 5 to indicate that I was also perfectly comfortable in a 5-mile wind with a temperature of 40° and relative humidity of 60°, but a temperature of 20° and a humidity of 80° with a 5-mile wind seemed very raw. I join the first two points on my diagram by a straight line. I might prolong it so that it would pass through the third point, but while the first point of the line represented comfort the latter part of the line